

1. A water dispersible fibrous fabric comprising:
a fibrous substrate, wherein less than about 20% of the fibers comprising the
fibrous substrate have a length of about 6-10 mm; and
a water-soluble binder;
5 wherein said binder is an ion-sensitive composition comprising a sulfonate anion
modified acrylic acid terpolymer and a non-crosslinking poly(ethylene-vinyl acetate),
wherein the composition is insoluble in a neutral salt solution containing at least about 0.3
weight percent salt, said salt comprising one or more monovalent ions;
wherein said binder comprises less than about 25% by weight of said fibrous fabric
10 and said fibrous substrate comprising more than about 75% by weight of said fibrous
fabric; and
wherein the fabric is dispersible in an aqueous environment containing up to about
200 ppm of one or more divalent and/or multivalent ions.
- 15 2. The water dispersible fibrous fabric of Claim 1, wherein said binder comprises from
about 10-15% by weight of said fibrous fabric and said fibrous substrate comprising from
about 85-90% by weight of said fibrous fabric.
- 20 3. The water dispersible fibrous fabric of Claim 1, wherein said fibers have a length of
about 7-9 mm.
4. The water dispersible fibrous fabric of Claim 1, said fibers have a length of about 8
mm.
- 25 5. The water dispersible fibrous fabric of Claim 1, wherein said binder comprises from
about 5% by weight to about 25% by weight of said fabric.
6. The water dispersible fibrous fabric of Claim 1, wherein said binder comprises from
about 10% by weight to about 20% by weight of said fabric.
- 30 7. The ion-sensitive composition of Claim 1, wherein the composition is dispersible in
water containing from about 15 ppm to about 150 ppm of one or more divalent and/or
multivalent ions.

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8. The ion-sensitive composition of Claim 1, wherein the composition is insoluble in a neutral salt solution containing from about 0.3 weight percent to about 5 weight percent salt.

5 9. The ion-sensitive composition of Claim 1, wherein the polymer is insoluble in a neutral salt solution containing from about 1 weight percent to about 4 weight percent salt.

10 10. The ion-sensitive composition of Claim 1, wherein the divalent and/or multivalent ions comprise Ca^{2+} ions, Mg^{2+} ions, Zn^{2+} ions, or a combination thereof.

11 11. The ion-sensitive composition of Claim 1, wherein the monovalent ions comprise Na^+ ions, Li^+ ions, K^+ ions, NH_4^+ ions, or a combination thereof.

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12 12. The ion-sensitive composition of Claim 1, wherein the acrylic acid terpolymer comprises at least one of acrylic acid and methacrylic acid, and one or more alkyl acrylates.

13 13. The ion-sensitive composition of Claim 1, wherein the sulfonate anion modified acrylic acid terpolymer is formed from at least four monomers selected from acrylic acid; 20 2-acrylamido-2-methyl-1-propanesulfonic acid and the alkali earth metal and organic amine salts thereof; butyl acrylate; and 2-ethylhexyl acrylate.

14 14. The ion-sensitive composition of Claim 1, wherein the sulfonate anion modified acrylic acid terpolymer is formed from at least four monomers selected from acrylic acid; 25 AMPS; NaAMPS; butyl acrylate; and 2-ethylhexyl acrylate.

15 15. The ion-sensitive composition of Claim 1, wherein the sulfonate anion modified acrylic acid terpolymer comprises from about 35 to less than about 80 mole percent acrylic acid; from greater than 0 to about 20 mole percent 2-acrylamido-2-methyl-1- 30 propanesulfonic acid and alkali earth metal and organic amine salts thereof; from greater than 0 to about 65 mole percent butyl acrylate; and from greater than 0 to about 45 mole percent 2-ethylhexyl acrylate.

16 16. The ion-sensitive composition of Claim 1, wherein the sulfonate anion modified acrylic acid terpolymer comprises from about 50 to less than about 67 mole percent 35 acrylic acid; from greater than 0 to about 10 mole percent 2-acrylamido-2-methyl-1-

propanesulfonic acid and alkali earth metal and organic amine salts thereof; from about 15 to about 28 mole percent butyl acrylate; and from about 7 to about 15 mole percent 2-ethylhexyl acrylate.

5 17. The ion-sensitive composition of Claim 1, wherein the sulfonate anion modified acrylic acid terpolymer comprises from about 57 to less than about 66 mole percent acrylic acid; from about 1 to about 6 mole percent 2-acrylamido-2-methyl-1-propanesulfonic acid and alkali earth metal and organic amine salts thereof; from about 15 to about 28 mole percent butyl acrylate; and from about 7 to about 13 mole percent 2-ethylhexyl acrylate.

10 18. The ion-sensitive composition of Claim 1, wherein the composition comprises from about 55 to about 95 weight percent of the sulfonate anion modified acrylic acid terpolymer.

15 19. The ion-sensitive composition of Claim 1, wherein the composition comprises from about 65 to about 80 weight percent of the sulfonate anion modified acrylic acid terpolymer.

20 20. The ion-sensitive composition of Claim 1, wherein the composition comprises from about 5 to about 45 weight percent of the non-crosslinking poly(ethylene-vinyl acetate).

25 21. The ion-sensitive composition of Claim 1, wherein the composition comprises from about 20 to about 35 weight percent of the non-crosslinking poly(ethylene-vinyl acetate).

30 22. The ion-sensitive composition of Claim 1, wherein the sulfonate anion modified acrylic acid terpolymer comprises from about 57 to less than about 66 mole percent acrylic acid; from about 1 to about 6 mole percent AMPS or NaAMPS; from about 15 to about 28 mole percent butyl acrylate; and from about 7 to about 13 mole percent 2-ethylhexyl acrylate; and wherein the composition comprises from about 65 to about 80 weight percent of the sulfonate anion modified acrylic acid terpolymer and from about 20 to about 35 weight percent of the non-crosslinking poly(ethylene-vinyl acetate).

35 23. The water dispersible fibrous fabric of claim 1, wherein said fibrous material is a nonwoven fabric.

24. The water dispersible fibrous fabric of claim 1, wherein said fibrous material will disperse in water after no more than about 60 minutes.

5 25. The water dispersible fibrous fabric of claim 1, wherein said fibrous material will disperse in water after no more than about 20 minutes.

26. The water dispersible fibrous fabric of claim 1, wherein said fibrous material will disperse in water after no more than about 10 minutes.

10 27. The water dispersible fibrous fabric of claim 1, wherein after up to about 60 minutes said fibrous material breaks up into multiple pieces each having an average size of less than about 50% relative to its pre-dispersed size.

15 28. The water dispersible fibrous fabric of claim 1, wherein after up to about 60 minutes said fibrous material breaks up into multiple pieces each having an average size of less than about 40% relative to its pre-dispersed size.

20 29. The water dispersible fibrous fabric of claim 1, wherein after up to about 60 minutes said fibrous material breaks up into multiple pieces each having an average size of less than about 30% relative to its pre-dispersed size.

30. The water dispersible fibrous fabric of claim 1, wherein said fabric is used in a disposable personal care product.

25 31. The water dispersible fibrous fabric of claim 1, wherein said personal care product is selected from a wipe, diaper, training pant, swimwear, absorbent underpant, adult incontinence product, feminine hygiene product, absorbent pad, wound dressing and bandage.

30 32. A disposable absorbent article comprising a water dispersible fibrous fabric, wherein the fabric comprises:

a fibrous substrate, the fibrous substrate comprising less than about 20% fiber fraction of fibers having a length of about 6-10 mm in length; and

35 a water-dispersible binder comprising a first polymer formed from at least four monomers selected from acrylic acid, 2-acrylamido-2-methyl-1-propanesulfonic acid and alkali earth metal and organic amine salts thereof, butyl acrylate, and 2-ethylhexyl

acrylate; and a second polymer comprising a non-crosslinking poly(ethylene-vinyl acetate); wherein the composition is insoluble in a neutral salt solution containing at least about 0.3 weight percent salt, said salt comprising one or more monovalent;

5 wherein said fabric is water dispersible in an aqueous environment containing up to about 200 ppm of one or more multivalent ions and a monovalent ion concentration of less than about 0.5% by weight.

10 33. The disposable absorbent article of Claim 32, wherein the fibrous substrate is comprised of pulp and synthetic fibers.

34. The disposable absorbent article of Claim 32, wherein the less than about 20% fiber fraction of fibers having a length of about 6-10 mm in length are synthetic fibers.

15 35. The disposable absorbent article of Claim 32, wherein at least about 80% of the fiber fraction of the fibrous substrate comprises pulp and less than about 20% of the fiber fraction of the fibrous substrate comprises synthetic fibers.

20 36. The disposable absorbent article of Claim 32, wherein about 85-95% of the fiber fraction of the fibrous substrate comprises pulp and about 5-15% of the fiber fraction of the fibrous substrate comprises synthetic fibers.

37. The disposable absorbent article of Claim 32, wherein about 3-17% of the fibers of the fibrous substrate have a fiber length of about 6-10 mm.

25 38. The disposable absorbent article of Claim 32, wherein about 5-15% of the fibers of the fibrous substrate have a fiber length of about 6-10 mm.

30 39. The disposable absorbent article of Claim 32, wherein about 15% of the fibers of fibrous substrate have a length of about 8 mm.

40. The disposable absorbent article of Claim 39, wherein the fibers of fibrous substrate having a length of about 8 mm are synthetic fibers.

35 41. The disposable absorbent article of Claim 32, wherein said binder comprises less than about 20% by weight of said fibrous fabric and said fibrous substrate comprising more than about 80% by weight of said fibrous fabric.

42. The disposable absorbent article of Claim 32, wherein said binder comprises about 10-15% by weight of said fibrous fabric and said fibrous substrate comprising more than about 85-90% by weight of said fibrous fabric.

43. The disposable absorbent article of claim 32, wherein the article is a personal care product selected from a wipe, diaper, training pant, swimwear, absorbent underpant, incontinence product, feminine hygiene product, absorbent pad, wound dressing and bandage.

44. The disposable absorbent article of Claim 32, wherein the first polymer of the water-dispersible binder comprises from about 35 to less than about 80 mole percent acrylic acid; from greater than 0 to about 20 mole percent 2-acrylamido-2-methyl-1-propanesulfonic acid and alkali earth metal and organic amine salts thereof; from greater than 0 to about 65 mole percent butyl acrylate; and from greater than 0 to about 45 mole percent 2-ethylhexyl acrylate.

45. The disposable absorbent article of Claim 32, wherein the first polymer of the water-dispersible binder comprises from about 50 to less than about 67 mole percent acrylic acid; from greater than 0 to about 10 mole percent 2-acrylamido-2-methyl-1-propanesulfonic acid and alkali earth metal and organic amine salts thereof; from about 15 to about 28 mole percent butyl acrylate; and from about 7 to about 15 mole percent 2-ethylhexyl acrylate.

46. The disposable absorbent article of Claim 32, wherein the first polymer of the water-dispersible binder comprises from about 57 to less than about 66 mole percent acrylic acid; from about 1 to about 6 mole percent 2-acrylamido-2-methyl-1-propanesulfonic acid and alkali earth metal and organic amine salts thereof; from about 15 to about 28 mole percent butyl acrylate; and from about 7 to about 13 mole percent 2-ethylhexyl acrylate.

47. The disposable absorbent article of Claim 32, wherein the first polymer of the water-dispersible binder is present in an amount from about 55 to about 95 weight percent.

48. The disposable absorbent article of Claim 32, wherein the first polymer of the water-dispersible binder is present in an amount from about 65 to about 80 weight percent.

5 49. The disposable absorbent article of Claim 32, wherein the second polymer of the water-dispersible binder is present in an amount from about 5 to about 45 weight percent.

10 50. The disposable absorbent article of Claim 32, wherein the water-dispersible binder comprises from about 20 to about 35 weight percent non-crosslinking poly(ethylene-vinyl acetate).

15 51. The disposable absorbent article of Claim 32, wherein the first polymer of the water-dispersible binder comprises from about 57 to less than about 66 mole percent acrylic acid; from about 1 to about 6 mole percent AMPS or NaAMPS; from about 15 to about 28 mole percent butyl acrylate; and from about 7 to about 13 mole percent 2-ethylhexyl acrylate; and wherein the composition comprises from about 65 to about 80 weight percent of the first polymer and from about 20 to about 35 weight percent of the second polymer.

20 52. A wet wipe comprising:
a fibrous substrate, wherein less than about 20% of the fibers comprising the fibrous substrate have a length of about 6-10 mm; and
an ion-sensitive water-dispersible binder comprising a sulfonate anion modified acrylic acid terpolymer and a non-crosslinking poly(ethylene-vinyl acetate), wherein the
25 composition is insoluble in a neutral salt solution containing at least about 0.3 weight percent salt, said salt comprising one or more monovalent ions;
wherein said binder comprises less than about 25% by weight of said fibrous fabric and said fibrous substrate comprising more than about 75% by weight of said fibrous fabric;
30 wherein the fabric is dispersible in an aqueous environment containing up to about 200 ppm of one or more divalent and/or multivalent ions; and
wherein after up to about 60 minutes said fibrous material breaks up into multiple pieces each having an average size of less than about 50% relative to its pre-dispersed size.

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